To Design, or not to Design:

An Introduction to a Six Article Series

by Ben Zweibelson

Remembering always what the World-Nature is, and what my own nature is, and how the one stands in respect to the other- so small a fraction of so vast a Whole- bear in mind that no man can hinder you from conforming each word and deed to that Nature of which you are a part.[1]

A new paradigm may be called a holistic worldview, seeing the world as an integrated whole rather than a dissociated collection of parts[2]

      Are the Joint Operational Planning Process (JOPP) and the Military Decision Making Process (MDMP) unable to address the growing complexities of modern, ill-structured conflict? Does the U.S. Army"s *design* methodology provide the military institution a more effective structure, format, vocabulary, and process that are understandable to the force and applicable? Many military professionals charge that *design* is „just MDMP"s mission analysis on steroids," while others claim design is merely „Effects Based Operations (EBO) by another name."

      By publishing the recent March 2010 edition of *Field Manual FM5-0; The Operations Process* with Chapter 3 entitled *Design*, the U.S. Army answers the former question with an affirmative.[3] As to the latter, this six article series on „Army Design" proposes that by making too many compromises on design content, structure, and theoretical underpinnings, the military confuses the majority of the force on what design actually is, and how it works. Critics in both the pro-MDMP and pro-EBO factions continue to resist design methodology for precisely what the Army fails to deliver in the brief fifteen pages of design doctrine.

      Design theory reflects a paradigm shift in military theory that directly challenges previously guarded concepts regarding doctrine, tactical fixation, heroic leadership, and institutional anti-intellectualism.[4] Yet Army design doctrine does not clearly identify which

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[1] Marcus Aurelius Antoninus, *Meditations* (New York: Penguin Classics, 1964) Book Two, section 9.

[2] Fritjof Capra, *The Web of Life* (New York: Doubleday, 1996), 6.

[3] The term „design" is used interchangeably with „conceptual planning" and other similar terms within military design theory; however U.S. Army doctrine selected „design" as the official term to describe "a methodology for applying critical and creative thinking to understand, visualize, and describe complex, ill-structured problems and develop approaches to solve them." United States Army Training and Doctrine Command, *Field Manual 5-0; The Operations Process* (Headquarters, Department of the Army, 2010), Glossary-4.

[4] Shimon Naveh, Jim Schneider, Timothy Challans, *The Structure of Operational Revolution; A Prolegomena* (Booz, Allen, Hamilton, 2009) 8-9; Brian McAllister Linn, *The Echo of Battle; The Army's Way of War* (Cambridge: Harvard University Press, 2007), 8. "For Heroes, war is simply battle- an extension of combat between individuals on both the physical and moral plane. The side whose commanders and soldiers exhibit superior courage, strength, discipline, martial skills, honor, and so forth will inevitably secure victory…"; Carl H. Builder, *The Masks of War; American Military Styles in Strategy and Analysis* (RAND Corporation: John Hopkins University Press, 1989) 6. "There is considerable evidence that the qualities of the U.S. military forces are determined more by cultural and institutional preferences for certain kinds of military forces [and theories, doctrine,

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academic or scientific field it originates. Is it a military adaptation of General Systems Theory, or descendent from sociological Game Theory? Did mathematical Chaos Theory provide the genesis for Army design doctrine, or did postmodern philosophy pull French and Greek concepts into the paternal form for design? Did postmodern economic theory, modern architectural design, or socio-educational theory inspire military concepts? Which military adapted design first? Some argue the Soviets during the Interwar Period, whereas others credit the Israeli Defense Force in the 1990s.[5] FM 5-0 is unsurprisingly silent on whether design is the conceptual offspring of another nation‟s military institution. As to answering the origin question, this six article series on Army Design responses „all of the above‟ and holds that due to U.S. Army attempting to satisfy all rival factions within the military institution, it pleased no one and published an orphaned design doctrine that suffers from multiple personality disorder of methodologies.

U.S. Army design doctrine requires significant modification in the areas of vocabulary, critical thinking, non-linear approaches, and it must ultimately translate design methodology into clear and concise products for tactical level application. These are no easy tasks. Design represents an ambitious undertaking for today‟s operational artists. "Without question, the synthesist will sometimes „solve‟ problems without building anything more than an edifice of words."[6] In some passages of FM 5-0, doctrine demonstrates some critical design concepts, yet Chapter 3: Design subsequently fails to expand upon these, or instead contradicts earlier comments.[7] Essentially, U.S. Army adaptation of design methodology is currently unable to provide the military novel and understandable approaches to complexity.

As a theory, design attempts to break the military out of the many tensions manifested within strategic aim to tactical action, synergy to compartmentalization, and codified structure to creative adaptation. "Systems thinking gives us a holistic perspective for viewing the world around us, and seeing ourselves in the world."[8] Unfortunately, the Army‟s new design doctrine suffers from attempting to sidestep what is perhaps unavoidable for military doctrinal codification; namely to prescribe in doctrine a „way of thinking‟ that cannot be expressed or contained within traditional military doctrinal form.[9]

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etc.] than by the threat."; Clayton R. Newell, *On Operational Art* (Washington: Center of Military History, 1994) 11. "The Army‟s concentration on the tactical level of war also reflected its increasingly poor relationships with the other services."
[5] Harold Nelson, (Edited by Michael Krause, Cody Phillips), *Historical Perspectives of the Operational Art* (Center of Military History, United States Army, 2007) 333. "The situation was different in the Soviet Union, so it was natural for Soviet military thinkers to develop their thoughts on the operational art, their term for what we have now come to call the operational level of war." Arthur V. Grant, (Edited by Michael Krause, Cody Phillips), *Historical Perspectives of the Operational Art* (Center of Military History, United States Army, 2007) 386. Part Four: The United States- *Operational Art and the Gettysburg Campaign* explores Operational Art and the Gettysburg Campaign. "[General] Meade demonstrated effective operational command." Shimon Naveh, *In Pursuit of Military Excellence; The Evolution of Operational Theory* (New York: Frank Cass Publishers, 2004) Naveh‟s thesis covers the origin of modern Operational doctrine and practice from Soviet interwar (1920-30s) theory. Shimon Naveh, *Operational Art and the IDF: A Critical Study of a Command Culture* (Center for Strategic & Budgetary Assessment (CSBA), contract: DASW01-02-D-0014-0084, September 30, 2007). Naveh explains the rise of Systemic Operational Design (SOD) as a theory for the Israeli Defense Force in the 1990s up through the 2006 Hezbollah War and its origins in Soviet Operational Shock theory and American operational doctrine in the 1980s. Naveh‟s thesis argues that American Cold War evolution of operational art spawned from Soviet interwar period theory.
[6] Gerald M. Weinberg, *Rethinking Systems Analysis and Design* (Boston: Little, Brown and Company, 1982) 10.
[7] United States Army Training and Doctrine Command, *Field Manual 5-0; The Operations Process* (Headquarters, Department of the Army, 2010), 1-2. FM 5-0 covers several design concepts such as *uncertainty, complexity, adaptation,* and *active rivals* in Chapter 1, yet in Chapter 3: Design the concepts are not explored appropriately. This series of design articles expands on how this flawed design doctrine requires significant modification.
[8] Ervin Laszlo, *The Systems View of the World; a Holistic Vision for Our Time* (New Jersey, Hampton Press, 1996) 16.
[9] John L. Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe: Military History Office, United States Army Training and Doctrine Command, 1997) 10-11, 50-51. Romjue summarizes the history of doctrine and the United States Army

The primacy of comprehension over detailed description is what the „To Design or Not to Design" article series deals with. Design theory focuses on gaining *understanding* through explanation of the dynamic open system holistically. Post-modernists and general system theorists define a system as a collection of diverse and interconnected variables or components, and the greater the variety of components and interactions, the more „complex" a system becomes. [10] Traditional military culture gravitates towards doctrinal codification that supports unilateral discipline and organized behavior- the Industrial Revolution finally placed man in the driving seat for designing the world instead of constantly operating under its mercy. [11] Unfortunately, the detailed processes that functioned effectively during man's transition from the agrarian (tactics fixated) into the post-Industrial (rise of operational art) now prevent military organizations from adapting these polemical conceptual devices that make design theory the next military paradigm. [12]

Description, the cornerstone of detailed planning, rests on propositional knowledge and asks questions dealing with „what." [13] Conceptually, design theory moves beyond propositional knowledge through a series of „why" and „how" questions that leads to understanding. "Understanding is the ability to formulate and answer questions and is a natural legacy forming

from 19th century tactical origins "derived from the experience of the Napoleonic Wars" through the 1990s post-Cold War revision phase. Even as late as 1991, senior Army leadership such as Brigadier General L.D. Holder felt that "doctrine was traditional, not revolutionary. Doctrine was by nature incomplete, yet internally consistent…operations were dependent on tactical success."

[10] Glen James, *Chaos Theory; The Essentials for Military Applications* (Newport: Naval War College, Center for Naval Warfare Studies, Newport Four article series on Army Design Number Ten, October, 1996) 3. James defines Chaos, of which general system theory shares many similarities to include defining the term „system"; Draper L. Kauffman, Jr. *Systems 1, An Introduction to Systems Thinking* (The Future Systems Series: T. Lance Holthusen, 1980) 1-2. Kauffman defines a system as "a collection of parts which interact with each other to function as a whole…its behavior depends on its entire structure and not just on adding up the behavior of its different pieces." Jeff Conklin, *Wicked Problems and Social Complexity* (CogNexus Institute, 2008. http://cognexus.org/wpf/wickedproblems.pdf Last accessed 05 January 2011) 2. Conklin discusses „wicked problems" and social complexity. "Another force of fragmentation is *social complexity,* the number and diversity of players who are involved in a project. The more parties involved in a collaboration, the more socially complex. The more different those parties are, the more diverse, the more socially complex;" Jeff Conklin, *Wicked Problems and Social Complexity* (CogNexus Institute, 2008. http://cognexus.org/wpf/wickedproblems.pdf Last accessed 05 January 2011) 12. "Social complexity is a function of the number and diversity of players who are involved in a project."

[11] Ervin Laszlo, *The Systems View of the World; a Holistic Vision for Our Time* (New Jersey, Hampton Press, 1996) 12. "The classic worldview was also anthropocentric, perceiving human beings as mastering and controlling nature for their own ends;" John L. Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe: Military History Office, United States Army Training and Doctrine Command, 1997) 87. Romjue describes discussions as late as 1992 where senior military leadership criticized Army doctrine (AirLand Battle imperatives in particular) as having "the mechanical nature of too many lists."

[12] Antoine Bousquet, *The Scientific Way of Warfare; Order and Chaos on the Battlefields of Modernity* (New York: Columbia University Press, 2009) 60. Bousquet describes the widespread deployment of doctrine and disciplinary practices throughout seventeenth and eighteenth century fielded forces as a consolidation of power and loyalty. "Drill and the associated surveillance of troops helped ensure political obedience and greater reliability of the military instrument for purposes of both internal rule and the settling of disputes with other states." Military obedience and increased reliability very much remain modern linchpins of military institutions and thus present challenges to paradigms in military theory; Valerie Ahl and T.F.H. Allen, *Hierarchy Theory: A Vision, Vocabulary, and Epistemology* (New York: Columbia University Press, 1996) 1. "Contemporary society has ambitions of solving complex problems through technical understanding…the first strategy is to reduce complex problems by gaining tight control over behavior. It is a mechanical solution in the style of differential equations and Newtonian calculus."

[13] Gerald M. Weinberg, *An Introduction to General Systems Thinking* (New York: John Wiley and Sons, 1975) 22. "Very recently, man invented science to increase that control, and he has been so fascinated by the quick and easy success that he has not paid much attention to consequences outside his analyses and averages." Antoine Bousquet, *The Scientific Way of Warfare; Order and Chaos on the Battlefields of Modernity* (New York: Columbia University Press, 2009) 56. "As the Enlightenment and Scientific Revolution took hold, reason and scientific method were recruited for the study and organization of all fields of natural phenomenon and human activity, including a quest for the discovery of the fundamental laws governing warfare;" Fritjof Capra, *The Web of Life* (New York: Anchor Books, 1996) 29. "In the analytic, or reductionist, approach, the parts themselves cannot be analyzed any further, except by reducing them to still smaller parts. Indeed, Western science has been progressing in that way…" Capra discusses scientists, of which military scientists and practitioners must also be included.

the foundation of our critical thinking…our understanding provides the process to answer the question." [14] U.S. Army design doctrine, instead of guiding operational planners towards critical thinking, fall victim to systemic institutional biases and doctrinal fallacies. It does this through inadequate vocabulary, brevity, and insistence on linear processes prominent in detailed planning. [15] Yet the Army"s decision to introduce design theory into doctrine represents willingness for institutional progress; these first steps require reinforcement.

A quick summarization on the origins of design is necessary so that core arguments of this six article series on Army Design remain perspicuous for the audience. Jamshid Gharajedaghi provides a compelling tertiary model discussion in *Systems Thinking* where successive paradigm shifts in human understanding of the world moved from "a mindless mechanical tool to a uni-minded biological being, and finally, to a multi-minded organized complexity." [16] The mechanical worldview reflects the age of Scientific Revolution leading into the Industrial Revolution where "a new set of beliefs, tools, and practices was established and according to which nature could be interrogated and its fundamental laws revealed." [17] Scientific paradigm shifts in evolutionary biology and similar fields led to the transition of worldview from a mindless reconstructive machine to a vulnerable and unstable biological mode of organization that was motivated on survival.

This uni-minded system worldview operates on cybernetic principles and the military systems theory manifestation of these organizing principles became ‚Effects-Based Operations (EBO)." EBO uses numerous biological principles of the uni-minded system theory and attempts to "exploit these patterns of interaction by identifying and acting on key nodes, or relationship between nodes, in order to bring about the desired behavior."[18] However, uni-minded biological systems theory centralizes on a hierarchal ‚brain" function that reinforces the aforementioned

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[14] Shimon Naveh, Jim Schneider, Timothy Challans, *The Structure of Operational Revolution; A Prolegomena* (Booz, Allen, Hamilton, 2009) 22.

[15] John L. Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe: Military History Office, United States Army Training and Doctrine Command, 1997) 64. Romjue describes General Frederick M. Franks Jr., Commander TRADOC corresponding in February 1992 with General Donn Starry on some of Franks" concepts for Army operations doctrine revision. Franks "added to that the notion the idea that the commander needed to think of his battle space in terms of all the factors that influenced it- and not just the linear factors." As late as 1992, Army operational doctrine pending revision faced criticism on its linear structure; current design doctrine continues the institutional bias.

[16] Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity; second edition* (Elsevier: Butterworth-Heinemann, 2006) 10.

[17] Antoine Bousquet, *The Scientific Way of Warfare; Order and Chaos on the Battlefields of Modernity* (New York: Columbia University Press, 2009) 15; James J. Schneider, *Theoretical Implications of Operational Art; On Operational Art* (Washington: Center of Military History, 1994) 18-20. "With the coming of the Industrial Revolution, and most especially during the American Civil War, armies became forced increasingly to defend the whole of their critical resource-laden territories…the occupation of the enemy"s territory and the concomitant destruction of his army gave rise to the contingent characteristics of distributed free maneuver…through operational art"; Draper L. Kauffman, Jr. *Systems 1, An Introduction to Systems Thinking* (The Future Systems Series: T. Lance Holthusen, 1980) 1. "For centuries scientists believed that the best way to learn more about something they didn"t understand was to take it apart and find out what it was made of;" Alex Ryan, *The Foundation For An Adaptive Approach; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 70. "With the industrial revolution, the planning and decision-making process gradually built up a well-oiled machine to reduce reliance on individual genius."

[18] Ketti Davison, *From Tactical Planning to Operational Design* (Military Review, September-October 2008) 35-36; Alex Ryan, *The Foundation For An Adaptive Approach; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 75-76. Ryan covers Network Centric Warfare limitations; Chris Smith, *Solving Twenty-First Century Problems with Cold War Metaphors; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 99. Smith criticizes EBO for the mechanistic linear causality of the theory that "derives from the US Air Force and rests comfortably in the context of applying air power…one of the theory"s flaws is that it assumes an unachievable level of predictability because it overlooks the feedback loops and emergent properties of complex adaptive systems."

mechanical worldview faults; emergent behavior of a complex adaptive system is not centrally controlled. [19] Where mindless mechanistic systems planning (see footnote 20- this paper does not infer that MDMP is „mindless" in a derogatory way) and uni-minded „effects-based-operations" processes fail to explain multi-minded organized complexity, design theory attempts to do so from a fundamentally different approach. [20]

By embracing the chaotic and adaptive nature of the multi-minded organized complexity worldview, design theory focuses on "innovation, adaptation, and continuous learning." [21] Unlike the mechanistic and uni-minded worldviews where components integrate into forms with specific and fixed causal relationships, design takes the worldview that social interactions are problematic and reflect a continuous and changing process. "The systems view perceives connections and communications between people, and between people and nature, and emphasizes community and integrity in both the natural and human world." [22] U.S. Army doctrine attempts to define and explain the goals of design, provide guidance for leaders, and explain how design methodology functions within the limited confines of fifteen pages of prescriptive text.

Design doctrine in its brevity attempts to instruct operational artists to "understand, visualize, and describe complex, ill-structured problems." [23] The first section of this six article series on Army Design explores design vocabulary; design theory actually follows a process defined as „problematization" while current design doctrine employs the inadequate term „problem." [24] By using insufficient terminology and limiting design theory to a brief fifteen pages, the U.S. Army is unable to effectively explain and convey core design concepts to the military organization. [25]

[19] John Warden, *The Air Campaign; On Operational Art* (Washington: Center of Military History, 1994) 85-87. Warden, a retired USAF Colonel, makes a uni-minded argument centered on Joint Doctrine „Operational Art" and „effects-based-operations" principles that link a central „brain" with the actions of the system rival. "Capturing or killing the state"s leader has frequently been decisive…all actions are aimed against the mind of the enemy command…at the operational level, the first ring or center of gravity is the commander himself."

[20] Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity; second edition* (Elsevier: Butterworth-Heinemann, 2006) 10; the term „mindless mechanistic systems planning" does not imply that tactical practitioners are in any way „mindless." Gharajedaghi uses the term „mindless" to reflect the linear causality logic inherent in Jominian military processes- applying specific principles of war with military units in precise direction will yield specific results. Mindless systems are closed and do not react, adapt, or learn. „Mindless" is a scientific term that describes system organization- mindless systems do not adapt or learn. A steam locomotive functions exactly as it was built, whereas animal migration methods adapt and change over generations based upon adaptation; a baby learns to walk and abandons crawling. People turn on their headlights on the highway at dusk when others do it- no one tells anyone to do it. That demonstrates adaptation and learning; group organization.

[21] United States Army Training and Doctrine Command, *Field Manual 5-0; The Operations Process*. (Headquarters, Department of the Army, 2010), 3-1.

[22] Ervin Laszlo, *The Systems View of the World; a Holistic Vision for Our Time*. (New Jersey, Hampton Press, 1996) 11.

[23] United States Army Training and Doctrine Command, *Field Manual 5-0; The Operations Process*. (Headquarters, Department of the Army, 2010), 3-1.

[24] Michel Foucault, *Discourse and Truth: The Problematization of Parrhesia* (originally covered in six lectures given by Michel Foucault at the University of California, Berkeley in October-November, 1983. Published online at: http://foucault.info/documents/parrhesia/ last accessed 16 December 2010) 65. Section I of this four article series on Army Design will thoroughly expand upon Foucault"s term „problematization." Essentially, it addresses „problems" through a series of „why" and „how" discourses that seek holistic, and often heretical meanings that manifest in tensions observed in the system.

[25] Justin Kelly and Mike Brennan,*OODA Versus ASDA: Metaphors at War; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 42. Kelly and Brennan defend Boyd"s brevity with his four-letter acronym „OODA" by contrasting it with Carl von Clausewitz"s 600 page *On War*. A similar argument works for the mere fifteen pages of design doctrine in FM 5-0; in such brevity, there cannot be any expectation of sophistication and completeness.

While the rigid inflexibility of doctrinal codification makes design theory a difficult model to incorporate into Operational Art, the imprecise vocabulary used throughout the current design chapter is even more problematic. For design to function as a bridge between strategic aims and tactical action, it requires unique vocabulary that stimulates understanding, visualizes abstract thought, and describes complex phenomenon. [26] The current practice of using military terms and phrases interchangeably and without discipline inhibits institutional understanding of design. „To Design or not to Design" recommends that heavily used words such as „problem" and „end state," traditionally associated with detailed military planning, should not continue their dual-use roles in design theory.

FM5-0 Chapter 3 Design describes design"s purpose as a methodology used to "make sense of complex, ill-structured problems." [27] The term „make sense" implies metacognition, or „thinking about thinking."[28] Unfortunately, military institutions have a strong propensity for describing an open system instead of explaining it. "The West, with its own kind of theoretical equipment, which is of a formalizing and technical nature, has proven itself to be singularly inept at thinking about the conduct of warfare, taking account only of *secondary matters* (preparations and material data) and *failing to consider the phenomenon itself*" (emphasis added). [29]

This institutional bias is problematic throughout current design doctrine and provides partial explanation of why there exists vigorous discourse on how the military should incorporate design into existing planning methodology. Granted, organizational conservatism does perform an important role preventing radical and ill-conceived change. [30] However, critical thinking and complex system synthesis are not fads. The third article of „To Design or Not to Design" explores critical thinking, or metacognition, and how design doctrine must restructure *FM5-0 Chapter 3 Design* to guide planners towards recognizing and transforming the system to address „problems" identified in the observed system.

A third central miscalculation present throughout *FM5-0 Chapter 3 Design* deals with the military institutional bias concerning linear processes that dominate all levels of planning. Essentially, the linear and mechanistic methodology in military planning that entrenched itself through the Industrial Revolution and Antoine Henri de Jomini"s principles of military strategy still remains today in a repackaged form that promotes Carl Von Clausewitz"s principles of attrition-based warfare and a conventional mechanistic theory of war. [31]

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[26] Alex Ryan, *The Foundation For An Adaptive Approach; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 71. "However, the abstract and general language used in complex systems has a crucial advantage over traditional scientific discourse."
[27] United States Army Training and Doctrine Command, *Field Manual 5-0; The Operations Process*. (Headquarters, Department of the Army, 2010), 3-6.
[28] Thomas Nelson, *Metacognition Core Readings* (Boston: Allyn and Bacon, 1992) 1. "Metacognition is defined as cognition about one"s own cognitions."
[29] Francois Jullien (translated by Janet Lloyd), *A Treatise on Efficacy Between Western and Chinese Thinking* (Honolulu: University of Hawai"i Press, 1996) 24.
[30] Scott Winter, *Fixed, Determined, Inviolable; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 53.
[31] Carl H. Builder, *The Masks of War; American Military Styles in Strategy and Analysis* (RAND Corporation: John Hopkins University Press, 1989) 38. Builder presents his thesis that the Army, along with sister services, are defined in part by an institutional power of identity that is tied to periods where the service was both victorious and accomplished national goals in a manner consistent with service identity. For the Army, WWII was the golden age of conventional attrition warfare that it continues to be smitten with. "But something happened to the Army in its passage through World War II that it liked; and it has not been able to free itself from the sweet memories of the Army that liberated France and swept victoriously into Germany…part of the Army is trying to revert to its traditional, historical role; and part is hanging on to an image of the Army at

The Military Decision Making Process and the Joint Operations Planning Process both reflect linear thinking. [32] In fact, the very word „line"is the linguistic cornerstone in military terms such as „physical line of operation", „logical line of operation", and „logical line of effort." Linear bias represents human blindness to complex open systems; human nature desires distinct patterns and narratives that draw from "preselected segments of the seen" so that generalized projections into the future are made. [33] Humans naturally are predisposed to viewing the universe as a linear progression of physical events that give the appearance of causality and time. [34] Design theory rejects linear processes concerning prediction of future system behavior. Subsequently design doctrine must purge itself of this military mimesis, as the fourth article of this series on Army Design will recommend.

While *FM5-0 Chapter 3 Design* does describe open systems as non-linear and complex problems, the same doctrine recommends using lines of operation or lines of effort to depict the operational approach in solving them[35]. Design doctrine"s reliance upon linear processes demonstrates the powerful institutional forces that codify detailed planning and attempt to „tacticalize" operational art. "In the military sphere, we train almost exclusively to the tactical level of abstraction; it is easiest to teach and easiest to learn; it is also the easiest to engineer." [36] „To Design or Not to Design"argues that the reality of a non-linear world or ecology require

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its finest year, the last year of World War II."; Francois Jullien (translated by Janet Lloyd), *A Treatise on Efficacy Between Western and Chinese Thinking* (Honolulu: University of Hawai"i Press, 1996) 11. "Clausewitz set about thinking through warfare…according to a „model" form, as an ideal and pure essence, "absolute warfare"…limitless use of force that, logically, tends to lead it, in reaction to attack, to extremes (that envisaged total destruction);" John L. Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe: Military History Office, United States Army Training and Doctrine Command, 1997) 11. "For the American Army, the dominant influence on 19th century tactical thinking came from writings derived from the experience of the Napoleonic Wars. Primary in influence were the writings of Major General Antoine Henri Jomini, whose *Precis de l'Art de la Guerre* was published in 1838. Jomini"s intent was a systematic search for principles in Napoleon"s mastery of battle and campaign."

[32] Antoine Bousquet, *The Scientific Way of Warfare; Order and Chaos on the Battlefields of Modernity* (New York: Columbia University Press, 2009) 46, 52, 54. "Linear functions are simple to solve as they can be broken up into individual parts which can be solved separately and their solutions added up…[Louis XIV"s] fondness for order and a linear aesthetic was also reflected in the pure geometric forms of the palace garden in Versailles." Geometric forms subsequently became the infatuation of military theorists such as British military theorist Henry Lloyd who stated, "fortifications were purely geometrical and artillery [was] nothing but geometry" in 1766.

[33] Nassim Taleb, *The Black Swan* (New York: Random House, 2007) 50. Taleb criticizes human societies for „tunneling" and focusing on preselected segments of the known so that generalized predictions can be made concerning the future. In essence, Taleb is critical of linear processes in planning, albeit on a far grander scale; Ludwig von Bertalanffy, *General System Theory* (New York: George Braziller, 1968) 150. "It is the irreversibility of physical events, expressed by the entropic function, which gives time its direction;" Chris Smith*, Solving Twenty-First Century Problems with Cold War Metaphors; Australian Army Journal For the Profession of Arms, Volume VI, Number 3* (Duntroon: Land Warfare Studies Centre, 2009) 96. "They assume that before taking action it is possible to fully comprehend a given operational problem; recognize a clear, achievable and static end; and develop a workable sequenced solution."

[34] Francois Jullien (translated by Janet Lloyd), *A Treatise on Efficacy Between Western and Chinese Thinking*. (Honolulu: University of Hawai"i Press, 2004), 34. "Human action takes place in irreversible time, and, so long as it is not verified by experience, the instrumental causality of the means remains hypothetical…there is always a danger that, between the means and the projected end, unpredictable events may intervene, blocking the supposed efficacy o the means and rendering the end unattainable."

[35] United States Army Training and Doctrine Command, *Field Manual 5-0; The Operations Process*. (Headquarters, Department of the Army, 2010), 3-59.

[36] Shimon Naveh, Jim Schneider, Timothy Challans, *The Structure of Operational Revolution; A Prolegomena* (Booz, Allen, Hamilton, 2009) 8; Clayton R. Newell, *On Operational Art* (Washington: Center of Military History, 1994) 12. "The long war in Vietnam, fought almost exclusively on the tactical level, simply confirmed the Army"s long-standing tactical focus." John L. Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe: Military History Office, United States Army Training and Doctrine Command, 1997) 6. "The common purview of most Army doctrinal teaching and writing was tactics and their derivative techniques and procedures. Tactics were the focus of the Army"s key doctrinal text, *Operations,* in its successful field service regulations and field manual editions down to the final two decades of the 20th century."

uniquely tailored non-linear solutions; lines themselves become irrelevant in any transformation other than the passage of time. At the tactical level, detailed planning should continue linear processes because they work; however, operational art when using design theory should avoid the prescriptive and sequential nature of linear processes.

The fifth article of „To Design or Not to Design" addresses the controversy on the use/utility of allegorical constructs (metaphors, analogies, homologies) of reality that attempt to increase a military organization"s understanding and visualization of these complex open systems.[37] *FM5-0 Chapter 3 Design* follows military doctrinal etiquette and is devoid of any allegorical content due to codifying principles that functioned for previous military requirements. The traditional military profession holds that the military audience might misinterpret metaphors and analogies, if placed into doctrine, in a prescriptive or pedantic manner.

Allegorical constructs are largely unnecessary in the common spheres encompassing detailed planning and tactical action such as analysis, synthesis, discernment, appreciation, and judgment.[38] Bertalanffy"s position that "analogies are scientifically worthless" relates to how meaningless similarities applied in detailed planning can "cause matters to become worse and the whole strategy we are using may be moving things in the wrong direction."[39] Allegorical constructs do run this risk when misapplied, however they also provide an exceptionally compatible vehicle for conveying explanation and understanding concerning the various metaphysical topics that comprise design.[40]

Metaphors and other allegorical constructs reflect a rich conceptual system; "the way we think, what we experience, and what we do every day is very much a matter of metaphor."[41] Ordinary language offers "unsuspected resources for hyletic analysis, for the simple reason that people [contemplate] the modification of the appearing of objects while they are changing."[42] This six article on design describes how the very structure of military doctrine and the codifying principles that organize it focus on „bureaucratic, administrative centralization" and „codification and logical centralization" of organizational behavior.[43] The Army struggles in tension over core

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[37] Ludwig von Bertalanffy, *General System Theory* (New York: George Braziller, 1968) 84-86. Bertalanffy discredits analogies as „superficial similarities of phenomena" and prefers the term „homologies" which has a greater scientific (biological evolutionary) meaning to describe patterns in general system theory.
[38] Shimon Naveh, Jim Schneider, Timothy Challans, *The Structure of Operational Revolution; A Prolegomena* (Booz, Allen, Hamilton, 2009) 8.
[39] Yaneer Bar-Yam, *Making Things Work; Solving Complex Problems in a Complex World.* (NECSI: Knowledge Press, 2004) 13-14; Ludwig von Bertalanffy, *General System Theory* (New York: George Braziller, 1968) 85.
[40] Lee Thayer, *Communication and Organized Theory,* edited by Frank E.X. Dance, *Human Communication Theory; Original Essays* (New York: Holt, Rinehart and Winston, Inc. 1967) 84. "First, communication always occurs in an organized context…at the interpersonal level, all transactions between individuals that incite or influence the communication that occurs in each of them- must themselves occur in an organized context." Thayer presents guiding assumptions on organizing concepts regarding human communication and how organizations transmit concepts.
[41] George Lakoff, Mark Johnson, *Metaphors We Live By* (Chicago: University of Chicago Press, 1980) 1;
[42] Paul Ricoeur (translated by Kathleen Blamey and David Pellauer), *Time and Narrative, Volume 3* (Chicago: University of Chicago Press, 1985) 27.
[43] Shimon Naveh, Jim Schneider, Timothy Challans, *The Structure of Operational Revolution; A Prolegomena* (Booz, Allen, Hamilton, 2009) 23; Paul Ricoeur (translated by Kathleen Blamey and David Pellauer), *Time and Narrative, Volume 3* (Chicago: University of Chicago Press, 1985) 116-117. Ricoeur explains codification of doctrine through defining „archives." "Putting documents produced by an institution (or its juridical equivalent) into archives has the goal of conserving or preserving them" while the decision on which documents are preserved reflect "the definition of the goals of the institution under consideration." Therefore, military doctrine reflects the goals of a military institution, and doctrine that is eliminated or rejected perhaps better defines those goals versus what is codified.

purposes of doctrine namely because design theory requires a non-doctrinal form. [44] If design theory requires integration into military codification, it must take a profoundly asymmetrical and altogether new form unlike any previous military application.

As the world becomes more complex, military operations and planning requirements will follow suit and require more than what previous generations considered sufficient. Military doctrine such as *FM5-0 Chapter 3 Design* attempts no small feat in its brief fifteen pages, and the Army‟s decision to explore design theory and attempt to codify design doctrine represents the acknowledgement that existing operational level planning is insufficient. Unfortunately, the hundreds of conceptual theories, rival schools of thought, continuously changing vocabulary and a handful of self-destructive design myths that continue to permeate military culture create an inhospitable environment U.S. Army design theory to flourish. [45]

FM5-0 Chapter 3 Design's fifteen pages of descriptive and tautological doctrine are not enough to trigger a wave of understanding and acceptance in the vast western military culture today. For that paradigm shift in military conceptual planning to occur, significant changes need to occur in FM 5-0 as well as throughout Joint and individual service doctrine. The „To Design or Not to Design‟ series explores several areas in which changes could improve both the form and function of military design theory for operational planning.

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[44] John L. Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe: Military History Office, United States Army Training and Doctrine Command, 1997) 78. General Frederick M. Franks, Jr. in a 1992 Commander‟s Planning Group provided the following guidance to SAMS writers on revising FM 100-5 for a post-Cold War environment: "hold an evolutionary, not a revolutionary approach." SAMS writers were instructed "not to surprise the Army…there would be no radical change from the 1986 manual‟s 12-chapter structure."

[45] The students of Seminar 1, School of Advanced Military Studies Class 10-01, posted blog entries concerning design doctrine and how the Army as an institution is significantly confused on how to apply FM 5-0. http://usacac.army.mil/blog/blogs/sams/archive/2010/02/04/improving-the-army-s-design-approach.aspx (last accessed 03 January 2011).